

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: VINSON, Charles R.  
KRYLOV, Dmitry
- (ii) TITLE OF INVENTION: EXTENSION OF A PROTEIN-PROTEIN  
INTERACTION SURFACE TO INACTIVATE THE FUNCTION OF A  
CELLULAR PROTEIN
- (iii) NUMBER OF SEQUENCES: 64
- (iv) CORRESPONDENCE ADDRESS:  
(A) ADDRESSEE: MORGAN & FINNEGAN, L.L.P.  
(B) STREET: 345 Park Avenue  
(C) CITY: New York  
(D) STATE: NY  
(E) COUNTRY: USA  
(F) ZIP: 10154-0053
- (v) COMPUTER READABLE FORM:  
(A) MEDIUM TYPE: Floppy disk  
(B) COMPUTER: IBM PC compatible  
(C) OPERATING SYSTEM: MS WORD 97  
(D) SOFTWARE: ASCII
- (vi) CURRENT APPLICATION DATA:  
(A) APPLICATION NUMBER: 09/299,495  
(B) FILING DATE: 26-APR-1999
- (vii) PRIOR APPLICATION DATA:  
(A) APPLICATION NUMBER: 60/001,654  
(B) FILING DATE: 31-JUL-1995
- (vii) PRIOR APPLICATION DATA:  
(A) APPLICATION NUMBER: 60/018,496  
(B) FILING DATE: 29-MAY-1996
- (vii) PRIOR APPLICATION DATA:  
(A) APPLICATION NUMBER: 08/690,011  
(B) FILING DATE: 31-JULY-1996
- (viii) ATTORNEY/AGENT INFORMATION:  
(A) NAME: Serunian, Leslie A.  
(B) REGISTRATION NUMBER: 35,353  
(C) REFERENCE/DOCKET NUMBER: 2026-4199US2
- (ix) TELECOMMUNICATION INFORMATION:  
(A) TELEPHONE: (212) 758-4800  
(B) TELEFAX: (212) 751-6849

(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 24 amino acids

- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

```

Asp Pro Asp Leu Glu Lys Glu Ala Glu Glu Leu Glu
1           5           10
Gln Glu Asn Ala Glu Leu Glu Leu Glu Asp Ser Phe
      15           20

```

(2) INFORMATION FOR SEQ ID NO:2:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 25 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: unknown
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

```

Asp Pro Asp Leu Glu Lys Glu Ala Glu Glu Leu Glu
1           5           10
Gln Glu Asn Ala Glu Leu Glu Glu Leu Glu Asp Ser
      15           20
Phe
25

```

(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: unknown
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

```

Asp Pro Asp Leu Glu Lys Glu Ala Glu Glu Leu Glu
1           5           10
Gln Glu Asn Ala Glu Leu Glu Glu Leu Glu Asp

```

Ser Phe  
25

(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 19 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: unknown  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Asp Pro Asp Glu Glu Glu Asp Asp Glu Glu Glu Leu  
 1 5 10

Glu Glu Leu Glu Asp Ser Phe  
 15

(2) INFORMATION FOR SEQ ID NO:5:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 11 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: unknown  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Asp Pro Asp Leu Glu Glu Leu Glu Asp Ser Phe  
 1 5 10

(2) INFORMATION FOR SEQ ID NO:6:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 223 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: unknown  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

GGATCCCCTT CCTACACAGC CTGCTGAAGA AGCAGCACGA

40

20250720 02265001

AAGAGAGAGG TTCGTCTAAT GAAGAACAGG GAAGCAGCAA	80
GAGAATGTCG TAGAAAGAAG AAAGAATATG TGAAATGTTT	120
AGAGAACAGA GTGGCAGTGC TTGAAAACCA AAACAAAACA	160
TTGATTGAGG AGCTAAAAGC ACTTAAGGAC CTTTACTGCC	200
ACAAGTCAGA TTAATTCAAG CTT	223

(2) INFORMATION FOR SEQ ID NO:7:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 68 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: unknown
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Leu	Pro	Thr	Gln	Pro	Ala	Glu	Glu	Ala	Ala	Arg	Lys
1				5					10		
Arg	Glu	Val	Arg	Leu	Met	Lys	Asn	Arg	Glu	Ala	Ala
		15					20				
Arg	Glu	Cys	Arg	Arg	Lys	Lys	Lys	Glu	Tyr	Val	Lys
25					30				35		
Cys	Leu	Glu	Asn	Arg	Val	Ala	Val	Leu	Glu	Asn	Gln
			40					45			
Asn	Lys	Thr	Leu	Ile	Glu	Glu	Leu	Lys	Ala	Leu	Lys
	50					55					60
Asp	Leu	Tyr	Cys	His	Lys	Ser	Asp				
				65							

(2) INFORMATION FOR SEQ ID NO:8:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 290 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: unknown
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

CCATGGACTA CAAGGACGAC GATGACAAGC ATATGGCTAG 40  
CATGACTGGT GGACAGCAAA TGGGTCGGGA TCCCCTTCCT 80  
ACACAGCCTG CTGAAGAAGC AGCACGAAAG AGAGAGGTTC 120  
GTCTAATGAA GAACAGGGAA GCAGCAAGAG AATGTCGTAG 160  
AAAGAAGAAA GAATATGTGA AATGTTTAGA GAACAGAGTG 200  
GCAGTGCTTG AAAACCAAAA CAAAACATTG ATTGAGGAGC 240  
TAAAAGCACT TAAGGACCTT TACTGCCACA AGTCAGATTA 280  
ATTCAAGCTT 290

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 92 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Met Asp Tyr Lys Asp Asp Asp Asp Lys His Met Ala  
1 5 10  
Ser Met Thr Gly Gly Gln Gln Met Gly Arg Asp Pro  
15 20  
Leu Pro Thr Gln Pro Ala Glu Glu Ala Ala Arg Lys  
25 30 35  
Arg Glu Val Arg Leu Met Lys Asn Arg Glu Ala Ala  
40 45  
Arg Glu Cys Arg Arg Lys Lys Lys Glu Tyr Val Lys  
50 55 60  
Cys Leu Glu Asn Arg Val Ala Val Leu Glu Asn Gln  
65 70  
Asn Lys Thr Leu Ile Glu Glu Leu Lys Ala Leu Lys  
75 80  
Asp Leu Tyr Cys His Lys Ser Asp  
85 90

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 266 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

CCATGGACTA CAAGGACGAC GATGACAAGC ATATGGCTAG	40
CATGACTGGT GGACAGCAAA TGGGTCGGGA TCCTGACCTG	80
GAACAACGTG CTGAGGAACT GGCCCGTGAA AACGAAGAGC	120
TGGAAAAAGA GGCCGAAGAG CTGGAGCAGG AACTGGCAGA	160
ACTCGAGAAC AGAGTGGCAG TGCTTGAAAA CCAAACAAA	200
ACATTGATTG AGGAGCTAAA AGCACTTAAG GACCTTTACT	240
GCCACAAGTC AGATTAATTC AAGCTT	266

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 84 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Met Asp Tyr Lys Asp Asp Asp Asp Lys His Met Ala	
1 5 10	
Ser Met Thr Gly Gly Gln Gln Met Gly Arg Asp Pro	
15 20	
Asp Leu Glu Gln Arg Ala Glu Glu Leu Ala Arg Glu	
25 30 35	
Asn Glu Glu Leu Glu Lys Glu Ala Glu Glu Leu Glu	
40 45	
Gln Glu Leu Ala Glu Leu Glu Asn Arg Val Ala Val	

50

55

60

Leu Glu Asn Gln Asn Lys Thr Leu Ile Glu Glu Leu  
65 70

Lys Ala Leu Lys Asp Leu Tyr Cys His Lys Ser Asp  
75 80

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 262 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GGATCCCAAG GTGGAACAGT TATCTCCAGA AGAAGAAGAG	40
AAAAGGAGAA TCCGAAGGGA AAGGAATAAG ATGGCTGCAG	80
CCAAATGCCG CAACCGGAGG AGGGAGCTGA CTGATACACT	120
CCAAGCGGAG ACAGACCAAC TAGAAGATGA GAAGTCTGCT	160
TTGCAGACCG AGATTGCCAA CCTGCTGAAG GAGAAGGAAA	200
AACTAGAGTT CATCCTGGCA GCTCACCGAC CTGCCTGCAA	240
GATCCCTGAT TAATTCAAGC TT	262

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 82 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Pro Asp Lys Val Glu Gln Leu Ser Pro Glu Glu Glu  
1 5 10

Glu Lys Arg Arg Ile Arg Arg Glu Arg Asn Lys Met  
15 20

Ala Ala Ala Lys Cys Arg Asn Arg Arg Arg Glu Leu  
25 30 35

Thr Asp Thr Leu Gln Ala Glu Thr Asp Gln Leu Glu  
40 45

Asp Glu Lys Ser Ala Leu Gln Thr Glu Ile Ala Asn  
50 55 60

Leu Leu Lys Glu Lys Glu Lys Leu Glu Phe Ile Leu  
65 70

Ala Ala His Arg Pro Ala Cys Lys Ile Pro  
75 80

(2) INFORMATION FOR SEQ ID NO:14:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 324 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: unknown
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

CCATGGACTA CAAGGACGAC GATGACAAGC ATATGGCTAG	40
CATGACTGGT GGACAGCAAA TGGGTCGGGA TCCCAAGGTG	80
GAACAGTTAT CTCCAGAAGA AGAAGAGAAA AGGAGAATCC	120
GAAGGGAAAG GAATAAGATG GCTGCAGCCA AATGCCGCAA	160
CCGGAGGAGG GAGCTGACTG ATACACTCCA AGCGGAGACA	200
GACCAACTAG AAGATGAGAA GTCTGCTTTG CAGACCGAGA	240
TTGCCAACCT GCTGAAGGAG AAGGAAAAAC TAGAGTTCAT	280
CCTGGCAGCT CACCGACCTG CCTGCAAGAT CCCTGATTAA	320
GCTT	324

(2) INFORMATION FOR SEQ ID NO:15:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 105 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: unknown
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide



(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Met	Asp	Tyr	Lys	Asp	Asp	Asp	Asp	Lys	His	Met	Ala										
1				5					10												
Ser	Met	Thr	Gly	Gly	Gln	Gln	Met	Gly	Arg	Asp	Pro										
		15					20														
Lys	Val	Glu	Gln	Leu	Ser	Pro	Glu	Glu	Glu	Glu	Lys										
25					30					35											
Arg	Arg	Ile	Arg	Arg	Glu	Arg	Asn	Lys	Met	Ala	Ala										
		40					45														
Ala	Lys	Cys	Arg	Asn	Arg	Arg	Arg	Glu	Leu	Thr	Asp										
	50				55					60											
Thr	Leu	Gln	Ala	Glu	Thr	Asp	Gln	Leu	Glu	Asp	Glu										
		65					70														
Lys	Ser	Ala	Leu	Gln	Thr	Glu	Ile	Ala	Asn	Leu	Leu										
	75				80																
Lys	Glu	Lys	Glu	Lys	Leu	Glu	Phe	Ile	Leu	Ala	Ala										
85				90					95												
His	Arg	Pro	Ala	Cys	Lys	Ile	Pro	Asp													
	100						105														

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 281 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

ATATACATAT GGCTAGCATG ACTGGTGGAC AGCAAATGGG	40
TCGGGATCCT GACCTGGAAC AACGTGCTGA GGAAGTGGCC	80
CGTGAAAACG AAGAGCTGGA AAAAGAGGCC GAAGAGCTGG	120
AGCAGGAAAA CGCTGAACTC GAGGCGGAGA CAGACCAACT	160
AGAAGATGAG AAGTCTGCTT TGCAGACCGA GATTGCCAAC	200
CTGCTGAAGG AGAAGGAAAA ACTAGAGTTC ATCCTGGCAG	240
CTCACCGACC TGCCTGCAAG ATCCCTGATT AATTCAAGCT	280

## (2) INFORMATION FOR SEQ ID NO:17:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 86 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg  
 1 5 10

Asp Pro Asp Leu Glu Gln Arg Ala Glu Glu Leu Ala  
 15 20

Arg Glu Asn Glu Glu Leu Glu Lys Glu Ala Glu Glu  
 25 30 35

Leu Glu Gln Glu Asn Ala Glu Leu Glu Ala Glu Thr  
 40 45

Asp Gln Leu Glu Asp Glu Lys Ser Ala Leu Gln Thr  
 50 55 60

Glu Ile Ala Asn Leu Leu Lys Glu Lys Glu Lys Leu  
 65 70

Glu Phe Ile Leu Ala Ala His Arg Pro Ala Cys Lys  
 75 80

Ile Pro  
 85

## (2) INFORMATION FOR SEQ ID NO:18:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 300 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

CCATGGACTA CAAGGACGAC GATGACAAGC ATATGGCTAG

40

20062101220102265001

CATGACTGGT GGACAGCAAA TGGGTCGGGA TCCTGACCTG	80
GAACAACGTG CTGAGGAACT GGCCCGTGAA AACGAAGAGC	120
TGGAAAAAGA GGCCGAAGAG CTGGAGCAGG AAAACGCTGA	160
ACTCGAGGCG GAGACAGACC AACTAGAAGA TGAGAAGTCT	200
GCTTTGCAGA CCGAGATTGC CAACCTGCTG AAGGAGAAGG	240
AAAAACTAGA GTTCATCCTG GCAGCTCACC GACCTGCCTG	280
CAAGATCCCT GATTAAGCTT	300

(2) INFORMATION FOR SEQ ID NO:19:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 97 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: unknown
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Met	Asp	Tyr	Lys	Asp	Asp	Asp	Asp	Lys	His	Met	Ala	
1				5					10			
Ser	Met	Thr	Gly	Gly	Gln	Gln	Met	Gly	Arg	Asp	Pro	
		15					20					
Asp	Leu	Glu	Gln	Arg	Ala	Glu	Glu	Leu	Ala	Arg	Glu	
25				30					35			
Asn	Glu	Glu	Leu	Glu	Lys	Glu	Ala	Glu	Glu	Leu	Glu	
			40					45				
Gln	Glu	Asn	Ala	Glu	Leu	Glu	Ala	Glu	Thr	Asp	Gln	
	50				55						60	
Leu	Glu	Asp	Glu	Lys	Ser	Ala	Leu	Gln	Thr	Glu	Ile	
			65					70				
Ala	Asn	Leu	Leu	Lys	Glu	Lys	Glu	Lys	Leu	Glu	Phe	
	75						80					
Ile	Leu	Ala	Ala	His	Arg	Pro	Ala	Cys	Lys	Ile	Pro	
85				90					95			
Asp												

(A) LENGTH: 353 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

CCATGGACTA	CAAGGACGAC	GATGACAAAGC	ATATGGCTAG	40
CATGACTGGT	GGACAGCAAA	TGGGTCGGA	TCCCTCCCCT	80
ATTGACATGG	AGTCGCAGGA	GAGAATCAAA	GCCGAGAGAA	120
AACGCATGAG	AAACAGAATT	GCGGCGTCCA	AATGCCGGAA	160
AAGGAAGTTG	GAAAGGATTG	CCAGGTTGGA	AGAAAAAGTG	200
AAAACTTTGA	AAGCCCAGAA	CTCAGAGCTG	GCATCCACGG	240
CCAACATGCT	CAGAGAACAG	GTTGCACAGC	TTAAGCAGAA	280
GGTCATGAAC	CATGTCAACA	GCGGGTGCCA	GCTAATGCTA	320
ACACAACAGT	TGCAAACGTT	TTGATTCAAG	CTT	353

(A) LENGTH: 113 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Ala Glu Arg Lys Arg Met Arg Asn Arg Ile Ala Ala

40

45

Ser Lys Cys Arg Lys Arg Lys Leu Glu Arg Ile Ala  
50 55 60

Arg Leu Glu Glu Lys Val Lys Thr Leu Lys Ala Gln  
65 70

Asn Ser Glu Leu Ala Ser Thr Ala Asn Met Leu Arg  
75 80

Glu Gln Val Ala Gln Leu Lys Gln Lys Val Met Asn  
85 90 95

His Val Asn Ser Gly Cys Gln Leu Met Leu Thr Gln  
100 105

Gln Leu Gln Thr Phe  
110

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 324 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

ATACATATGG CTAGCATGAC TGGTGGACAG CAAATGGGTC	40
GGGATCCCGA CGAAGAGGAA GATGACGAAG AAGAACTCGA	80
GGAAC TGGAA GACAGCTTTC ACAGTTTGCG GGA CTGAGTC	120
CCATCACTCC AAGGAGAGAA GGCATCCCGG GCCCAAATCC	160
TAGACAAAGC AACAGAGTAT ATCCAGTATA TGCGAAGGAA	200
AAACCATACG CACCAGCAAG ACATTGATGA CCTCAAGCGG	240
CAG AATGCTC TTCTGGAGCA ACAAGTCCGT GCA CTGGAGA	280
AGGCAAGATC AAGTGCCCAA CTGCAGACCT GAGGCAAGCT	320
TATC	324

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 101 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: unknown  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

```

Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
1           5           10
Asp Pro Asp Glu Glu Glu Asp Asp Glu Glu Glu Leu
15           20
Glu Glu Leu Glu Asp Ser Phe His Ser Leu Arg Asp
25           30           35
Ser Val Pro Ser Leu Gln Gly Glu Lys Ala Ser Arg
40           45
Ala Gln Ile Leu Asp Lys Ala Thr Glu Tyr Ile Gln
50           55           60
Tyr Met Arg Arg Lys Asn His Thr His Gln Gln Asp
65           70
Ile Asp Asp Leu Lys Arg Gln Asn Ala Leu Leu Glu
75           80
Gln Gln Val Arg Ala Leu Glu Lys Ala Arg Ser Ser
85           90           95
Ala Gln Leu Gln Thr
100
  
```

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 341 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: unknown  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

```

ATATACATAT GGCTAGCATG ACTGGTGGAC AGCAAATGGG          40
TCGGGATCCT GACCTGGAAA AAGAGGCCGA AGAGCTGGAG          80
CAGGAAAACG CTGAACTCGA GCTGGAAGAC AGCTTTCACA         120
  
```

GTTTGC GGGA CTCAGTCCCA TCACTCCAAG GAGAGAAGGC 160  
 ATCCCGGGCC CAAATCCTAG ACAAAGCAAC AGAGTATATC 200  
 CAGTATATGC GAAGGAAAAA CCATACGCAC CAGCAAGACA 240  
 TTGATGACCT CAAGCGGCAG AATGCTCTTC TGGAGCAACA 280  
 AGTCCGTGCA CTGGAGAAGG CAAGATCAAG TGCCCAACTG 320  
 CAGACCTGAG GCAAGCTTAT C 341

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 106 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg  
 1 5 10  
 Asp Pro Asp Leu Glu Lys Glu Ala Glu Glu Leu Glu  
 15 20  
 Gln Glu Asn Ala Glu Leu Glu Leu Glu Asp Ser Phe  
 25 30 35  
 His Ser Leu Arg Asp Ser Val Pro Ser Leu Gln Gly  
 40 45  
 Glu Lys Ala Ser Arg Ala Gln Ile Leu Asp Lys Ala  
 50 55 60  
 Thr Glu Tyr Ile Gln Tyr Met Arg Arg Lys Asn His  
 65 70  
 Thr His Gln Gln Asp Ile Asp Asp Leu Lys Arg Gln  
 75 80  
 Asn Ala Leu Leu Glu Gln Gln Val Arg Ala Leu Glu  
 85 90 95  
 Lys Ala Arg Ser Ser Ala Gln Leu Gln Thr  
 100 105

(2) INFORMATION FOR SEQ ID NO:26:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 344 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: unknown  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

ATATACATAT GGCTAGCATG ACTGGTGGAC AGCAAATGGG	40
TCGGGATCCT GACCTGGAAA AAGAGGCCGA AGAGCTGGAG	80
CAGGAAAACG CTGAACTCGA GGAAGTGGAA GACAGCTTTC	120
ACAGTTTGCG GGACTCAGTC CCATCACTCC AAGGAGAGAA	160
GGCATCCCGG GCCCAAATCC TAGACAAAGC AACAGAGTAT	200
ATCCAGTATA TGCGAAGGAA AAACCATACG CACCAGCAAG	240
ACATTGATGA CCTCAAGCGG CAGAATGCTC TTCTGGAGCA	280
ACAAGTCCGT GCACTGGAGA AGGCAAGATC AAGTGCCCAA	320
CTGCAGACCT GAGGCAAGCT TATC	344

(2) INFORMATION FOR SEQ ID NO:27:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 107 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: unknown  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Met	Ala	Ser	Met	Thr	Gly	Gly	Gln	Gln	Met	Gly	Arg
1				5					10		
Asp	Pro	Asp	Leu	Glu	Lys	Glu	Ala	Glu	Glu	Leu	Glu
			15					20			
Gln	Glu	Asn	Ala	Glu	Leu	Glu	Glu	Leu	Glu	Asp	Ser
25					30					35	
Phe	His	Ser	Leu	Arg	Asp	Ser	Val	Pro	Ser	Leu	Gln
			40					45			



Gly Glu Lys Ala Ser Arg Ala Gln Ile Leu Asp Lys  
50 55 60

Ala Thr Glu Tyr Ile Gln Tyr Met Arg Arg Lys Asn  
65 70

His Thr His Gln Gln Asp Ile Asp Asp Leu Lys Arg  
75 80

Gln Asn Ala Leu Leu Glu Gln Gln Val Arg Ala Leu  
85 90 95

Glu Lys Ala Arg Ser Ser Ala Gln Leu Gln Thr  
100 105

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 347 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

ATATACATAT GGCTAGCATG ACTGGTGGAC AGCAAATGGG	40
TCGGGATCCT GACCTGGAAA AAGAGGCCGA AGAGCTGGAG	80
CAGGAAAACG CTGAACTCGA GGAAGAGCTG GAAGACAGCT	120
TTCACAGTTT GCGGGACTCA GTCCCATCAC TCCAAGGAGA	160
GAAGGCATCC CGGGCCCAA TCCTAGACAA AGCAACAGAG	200
TATATCCAGT ATATGCGAAG GAAAAACCAT ACGCACCAGC	240
AAGACATTGA TGACCTCAAG CGGCAGAATG CTCTTCTGGA	280
GCAACAAGTC CGTGCACTGG AGAAGGCAAG ATCAAGTGCC	320
CAACTGCAGA CCTGAGGCAA GCTTATC	347

(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 108 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg  
1 5 10  
Asp Pro Asp Leu Glu Lys Glu Ala Glu Glu Leu Glu  
15 20  
Gln Glu Asn Ala Glu Leu Glu Glu Glu Leu Glu Asp  
25 30 35  
Ser Phe His Ser Leu Arg Asp Ser Val Pro Ser Leu  
40 45  
Gln Gly Glu Lys Ala Ser Arg Ala Gln Ile Leu Asp  
50 55 60  
Lys Ala Thr Glu Tyr Ile Gln Tyr Met Arg Arg Lys  
65 70  
Asn His Thr His Gln Gln Asp Ile Asp Asp Leu Lys  
75 80  
Arg Gln Asn Ala Leu Leu Glu Gln Gln Val Arg Ala  
85 90 95  
Leu Glu Lys Ala Arg Ser Ser Ala Gln Leu Gln Thr  
100 105

(2) INFORMATION FOR SEQ ID NO:30:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 277 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

GGATCCCAAC GACAAGAGGC GGACACACAA CGTCTTGAA 40  
CGTCAGAGGA GGAACGAGCT GAAGCGCAGC TTTTGTGCCC 80  
TGCGTGACCA GATCCCTGAA TTGGAAAACA ACGAAAAGGC 120  
CCCCAAGGTA GTGATCCTCA AAAAAGCCAC CGCCTACATC 160  
CTGTCCATTC AAGCAGACGA GCACAAGCTC ACCTCTGAAA 200

AGGACTTATT GAGGAAACGA CGAGAACAGT TGAAACACAA 240  
 ACTCGAACAG CTTCGAAACT CTGGTGCATA AAAGCTT 277

(2) INFORMATION FOR SEQ ID NO:31:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 87 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: unknown
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Asn Asp Lys Arg Arg Thr His Asn Val Leu Glu Arg  
 1 5 10  
 Gln Arg Arg Asn Glu Leu Lys Arg Ser Phe Phe Ala  
 15 20  
 Leu Arg Asp Gln Ile Pro Glu Leu Glu Asn Asn Glu  
 25 30 35  
 Lys Ala Pro Lys Val Val Ile Leu Lys Lys Ala Thr  
 40 45  
 Ala Tyr Ile Leu Ser Ile Gln Ala Asp Glu His Lys  
 50 55 60  
 Leu Thr Ser Glu Lys Asp Leu Leu Arg Lys Arg Arg  
 65 70  
 Glu Gln Leu Lys His Lys Leu Glu Gln Leu Arg Asn  
 75 80  
 Ser Gly Ala  
 85

(2) INFORMATION FOR SEQ ID NO:32:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 296 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: unknown
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

ATGGCTAGCA TGACTGGTGG ACAGCAAATG GGTCGGGATC 40  
 CTGGCGGTGG CCTGGAACAA CGTGCTGAGG AACTGGCCCCG 80  
 TGAAAACGAA GAGCTGGAAA AAGAGGCCGA AGAGCTGGAG 120  
 CAGGAAAACG CTGAACTCGA GCAGGAAGTG TTGGAGTTGG 160  
 AAAGTCGTAA TGACCGCCTG CGCAAGGAAG TGGAACAGCT 200  
 GGAGCGTGAA CTGGACACGC TCGGGGGTAT CTTCCGCCAG 240  
 CTGCCTGAGA GCTCCTTGGT CAAGGCCATG GGCAACTGCG 280  
 CGTGAGGCGA ATTCAA 296

(2) INFORMATION FOR SEQ ID NO:33:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: unknown  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg Asp  
 1 5 10

Pro

(2) INFORMATION FOR SEQ ID NO:34:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 52 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: unknown  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Gly Gly Gly Thr Gln Gln Glu Val Leu Glu Leu Glu  
 1 5 10

Ser Arg Asn Asp Arg Leu Arg Lys Glu Val Glu Gln  
 15 20

Leu Glu Arg Glu Leu Asp Thr Leu Arg Gly Ile Phe

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(i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 12 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: unknown  
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

(2) INFORMATION FOR SEQ ID NO:36:

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Gln Glu Asn Ala Glu Leu Glu  
15

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 26 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

21

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

Gly Gly Gly Leu Ala Arg Glu Asn Glu Glu Leu Glu  
1 5 10

Lys Glu Ala Glu Glu Leu Glu Gln Glu Asn Ala Glu  
15 20

Leu Glu  
25

(2) INFORMATION FOR SEQ ID NO:38:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 33 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Gly Gly Gly Leu Glu Gln Arg Ala Glu Glu Leu Ala  
1 5 10

Arg Glu Asn Glu Glu Leu Glu Lys Glu Ala Glu Glu  
15 20

Leu Glu Gln Glu Asn Ala Glu Leu Glu  
25 30

(2) INFORMATION FOR SEQ ID NO:39:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 26 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Gly Gly Gly Leu Ala Arg Asn Asn Ile Ala Val Arg  
1 5 10

Lys Ser Arg Asp Lys Ala Lys Gln Arg Asn Val Glu  
15 20

Leu Glu

25

(2) INFORMATION FOR SEQ ID NO:40:

- (i) SEQUENCE CHARACTERISTICS:  
    (A) LENGTH: 26 amino acids  
    (B) TYPE: amino acid  
    (C) STRANDEDNESS: unknown  
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Gly Gly Gly Leu Ala Arg Asn Asn Ile Ala Leu Arg  
1                    5                    10

Lys Ser Ala Asp Lys Leu Lys Gln Arg Asn Val Glu  
          15                    20

Leu Glu  
25

(2) INFORMATION FOR SEQ ID NO:41:

- (i) SEQUENCE CHARACTERISTICS:  
    (A) LENGTH: 26 amino acids  
    (B) TYPE: amino acid  
    (C) STRANDEDNESS: unknown  
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Gly Gly Gly Leu Ala Arg Glu Asn Ile Ala Val Glu  
1                    5                    10

Lys Glu Arg Asp Lys Ala Glu Gln Glu Asn Val Glu  
          15                    20

Leu Glu  
25

(2) INFORMATION FOR SEQ ID NO:42:

- (i) SEQUENCE CHARACTERISTICS:  
    (A) LENGTH: 26 amino acids  
    (B) TYPE: amino acid  
    (C) STRANDEDNESS: unknown  
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Gly Gly Gly Leu Ala Arg Asn Asn Glu Glu Val Arg  
1 5 10

Lys Ser Arg Glu Glu Ala Lys Gln Arg Asn Ala Glu  
15 20

Leu Glu  
25

(2) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 141 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: unknown

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Ser Glu Tyr Gln Pro Ser Leu Phe Ala Leu Asn Pro  
1 5 10

Met Gly Phe Ser Pro Leu Asp Gly Ser Lys Ser Thr  
15 20

Asn Glu Asn Val Ser Ala Ser Thr Ser Thr Ala Lys  
25 30 35

Pro Met Val Gly Gln Leu Ile Phe Asp Lys Phe Ile  
40 45

Lys Thr Glu Glu Asp Pro Gly Lys Ala Lys Lys Ser  
50 55 60

Val Asp Lys Asn Ser Asn Glu Tyr Arg Val Arg Arg  
65 70

Glu Arg Asn Asn Ile Ala Val Arg Lys Ser Arg Asp  
75 80

Lys Ala Lys Gln Arg Asn Val Glu Thr Gln Gln Lys  
85 90 95

Val Leu Glu Leu Thr Ser Asp Asn Asp Arg Leu Arg  
100 105

Lys Arg Val Glu Gln Leu Ser Arg Glu Leu Asp Thr



[illegible]

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 83 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

(2) INFORMATION FOR SEQ ID NO:45:

(ii) MOLECULE TYPE: peptide

25

Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg Asp  
 1 5 10

Pro Leu Glu Glu Lys Val Phe Val Pro Asp Glu Gln  
 15 20

Lys Asp Glu Lys Tyr Trp Thr Arg Arg Lys Lys Asn  
 25 30 35

Asn Val Ala Ala Lys Arg Ser Arg Asp Ala Arg Arg  
 40 45

Leu Lys Glu Asn Gln Thr Gln Gln Lys Val Leu Glu  
 50 55 60

Leu Thr Ser Asp Asn Asp Arg Leu Arg Lys Arg Val  
 65 70

Glu Gln Leu Ser Arg Glu Leu Asp Thr Leu Arg Gly  
 75 80

Ile Phe Arg Gln Leu Pro Glu Ser Ser Leu Val Lys  
 85 90 95

Ala Met Gly Asn Cys Ala  
 100

(2) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

GTCAGTCAGA TTGCGCAATA TCGGTCAG

28

(2) INFORMATION FOR SEQ ID NO:47:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

ATTGCGCAAT

10

(2) INFORMATION FOR SEQ ID NO:48:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 13 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Met Asp Tyr Lys Asp Asp Asp Asp Lys Lys Lys Arg Lys  
1 5 10

(2) INFORMATION FOR SEQ ID NO:49:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 9 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

Tyr Pro Tyr Asp Val Pro Asp Tyr Ala  
1 5

(2) INFORMATION FOR SEQ ID NO:50:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

Asp Tyr Lys Asp Asp Asp Asp Lys  
1 5

(2) INFORMATION FOR SEQ ID NO:51:

- (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg  
1 5 10

(2) INFORMATION FOR SEQ ID NO:52:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 86 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg  
1 5 10

Asp Pro Asp Leu Glu Gln Arg Ala Glu Glu Leu Ala  
15 20

Arg Glu Asn Glu Glu Leu Glu Lys Glu Ala Glu Glu  
25 30 35

Leu Glu Gln Glu Asn Ala Glu Leu Glu Ala Glu Thr  
40 45

Asp Gln Leu Glu Asp Glu Lys Ser Ala Leu Gln Thr  
50 55 60

Glu Ile Ala Asn Leu Leu Lys Glu Lys Glu Lys Leu  
65 70

Glu Phe Ile Leu Ala Ala His Arg Pro Ala Cys Lys  
75 80

Ile Pro  
85

(2) INFORMATION FOR SEQ ID NO:53:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 34 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

Asp Pro Asp Leu Glu Gln Arg Ala Glu Glu Leu Ala  
1 5 10  
Arg Glu Asn Glu Glu Leu Glu Lys Glu Ala Glu Glu  
15 20  
Leu Glu Gln Glu Asn Ala Glu Leu Glu Gln  
25 30

(2) INFORMATION FOR SEQ ID NO:54:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 34 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: unknown

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

Asp Pro Asp Leu Glu Gln Arg Ala Glu Glu Leu Ala  
1 5 10  
Arg Glu Asn Glu Glu Leu Glu Lys Glu Ala Glu Glu  
15 20  
Leu Glu Gln Glu Leu Ala Glu Leu Glu Gln  
25 30

(2) INFORMATION FOR SEQ ID NO:55:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 31 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: unknown

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

Arg Ile Lys Ala Glu Arg Lys Arg Met Arg Asn Arg  
1 5 10  
Ile Ala Ala Ser Lys Cys Arg Lys Arg Lys Leu Glu

15

20

Arg Ile Ala Arg Leu Glu Glu  
25 30

(2) INFORMATION FOR SEQ ID NO:56:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Ser Asn Glu Tyr Arg Val Arg Arg Glu Arg Asn Asn  
1 5 10

Ile Ala Val Arg Lys Ser Arg Asp Lys Ala Lys Gln  
15 20

Arg Asn Val Glu Thr Gln Gln  
25 30

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 34 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Gly Gly Gly Leu Glu Gln Arg Ala Glu Glu Leu Ala  
1 5 10

Arg Glu Asn Glu Glu Leu Glu Lys Glu Ala Glu Glu  
15 20

Leu Glu Gln Glu Asn Ala Glu Leu Glu Gln  
25 30

(2) INFORMATION FOR SEQ ID NO:58:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid

(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Ser Asn Glu Tyr Arg Val Arg Arg Glu Arg Asn Asn  
1 5 10

Ile Ala Val Arg Lys Ser Arg Asp Lys Ala Lys Gln  
15 20

Arg Asn Val Glu Thr Gln Gln  
25 30

(2) INFORMATION FOR SEQ ID NO:59:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 31 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

Asp Glu Lys Tyr Trp Thr Arg Arg Lys Lys Asn Asn  
1 5 10

Val Ala Ala Lys Arg Ser Arg Asp Ala Arg Arg Leu  
15 20

Lys Glu Asn Gln Thr Gln Gln  
25 30

(2) INFORMATION FOR SEQ ID NO:60:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 31 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

Glu Leu Lys Arg Gln Lys Arg Lys Gln Ser Asn Arg  
1 5 10

Glu Ser Ala Arg Arg Ser Arg Leu Arg Lys Gln Ala  
15 20

Glu Cys Glu Gln Leu Gln Gln  
25 30

(2) INFORMATION FOR SEQ ID NO:61:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

Asp Pro Gly Gly Gly  
1 5

(2) INFORMATION FOR SEQ ID NO:62:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 4 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

Asp Pro Glu Glu  
1

(2) INFORMATION FOR SEQ ID NO:63:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

Asp Pro Asp Glu Glu Glu  
1 5



(2) INFORMATION FOR SEQ ID NO:64:

- (i) SEQUENCE CHARACTERISTICS:  
    (A) LENGTH: 89 amino acids  
    (B) TYPE: amino acid  
    (C) STRANDEDNESS: unknown  
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:

Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg  
1                    5                    10

Asp Pro Gly Gly Gly Leu Glu Gln Arg Ala Glu Glu  
                    15                    20

Leu Ala Arg Glu Asn Glu Glu Leu Glu Lys Glu Ala  
25                    30                    35

Glu Glu Leu Glu Gln Glu Asn Ala Glu Leu Glu Gln  
                    40                    45

Glu Val Leu Glu Leu Glu Ser Arg Asn Asp Arg Leu  
50                    55                    60

Arg Lys Glu Val Glu Gln Leu Glu Arg Glu Leu Asp  
                    65                    70

Thr Leu Arg Gly Ile Phe Arg Gln Leu Pro Glu Ser  
75                    80

Ser Leu Val Lys Ala  
85